

New Developments in Signal Processing, Bird Detection and Clutter Suppression

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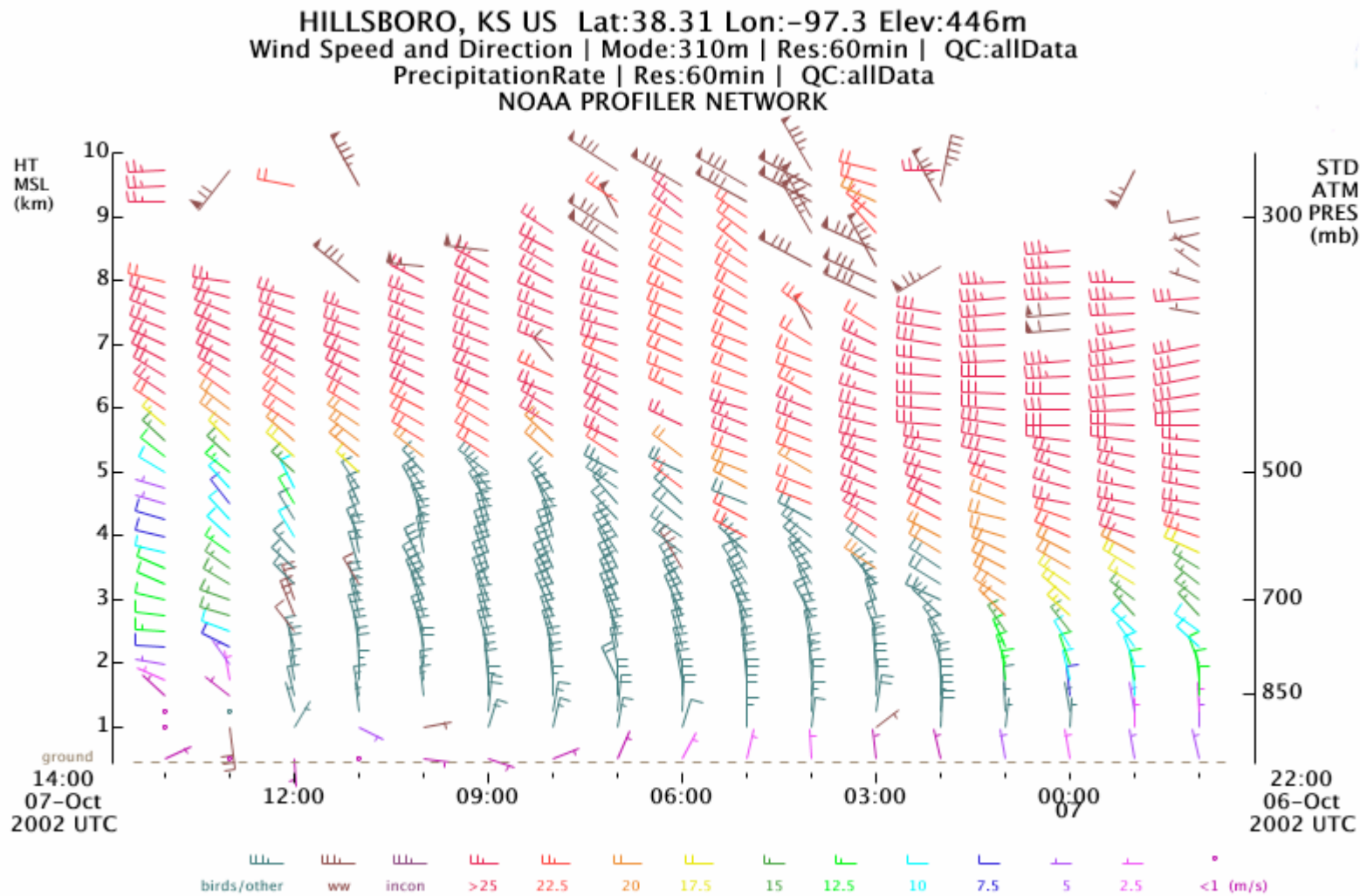
NWA Annual Meeting, Ft. Worth, Texas

October 19-24, 2002



Problem Areas:

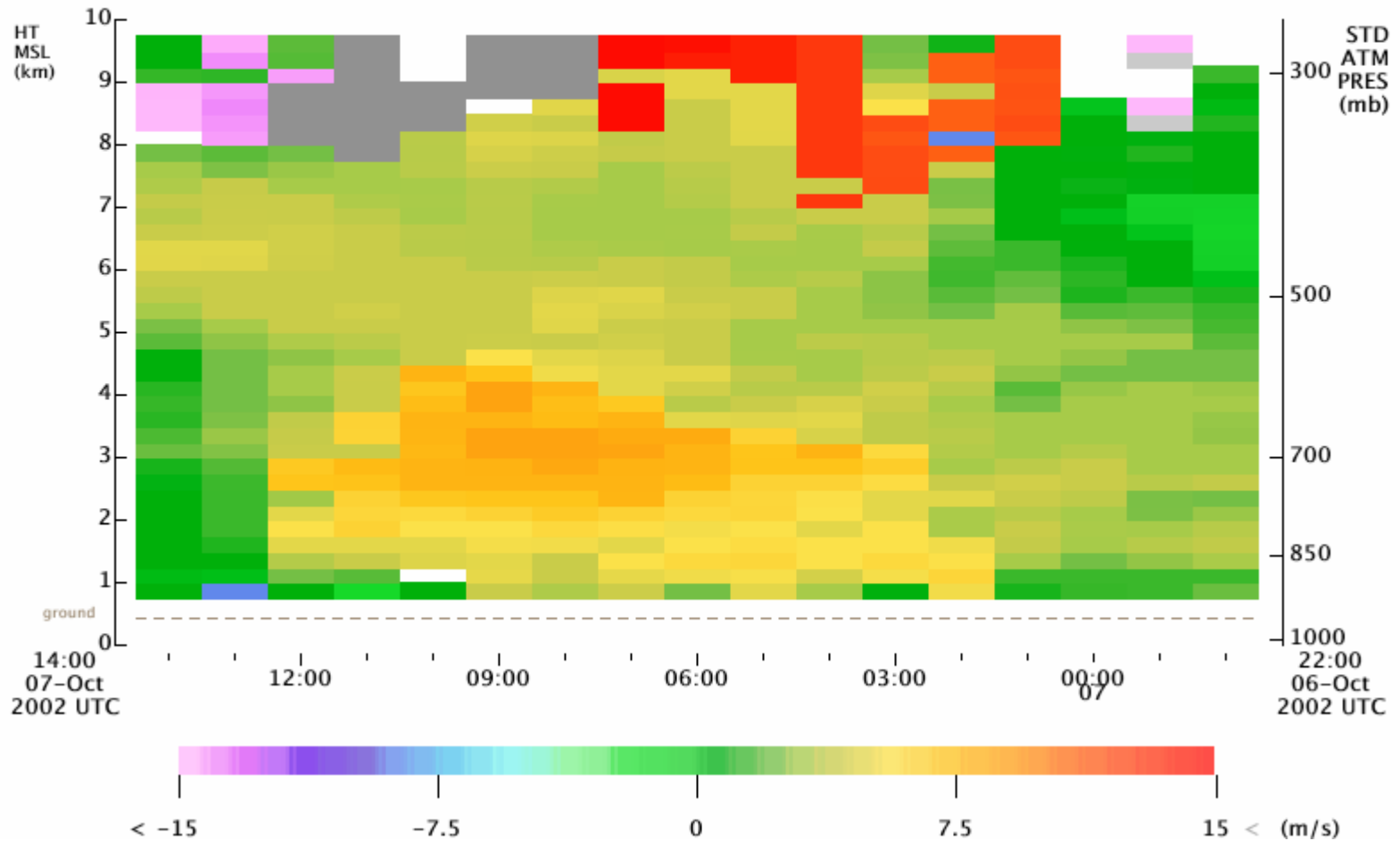
- Birds
- Ground Clutter
- RF Interference



HILLSBORO, KS US Lat:38.31 Lon:-97.3 Elev:446m

RadialVelocity | Beam:N(352deg) | Res:60min | QC:allData

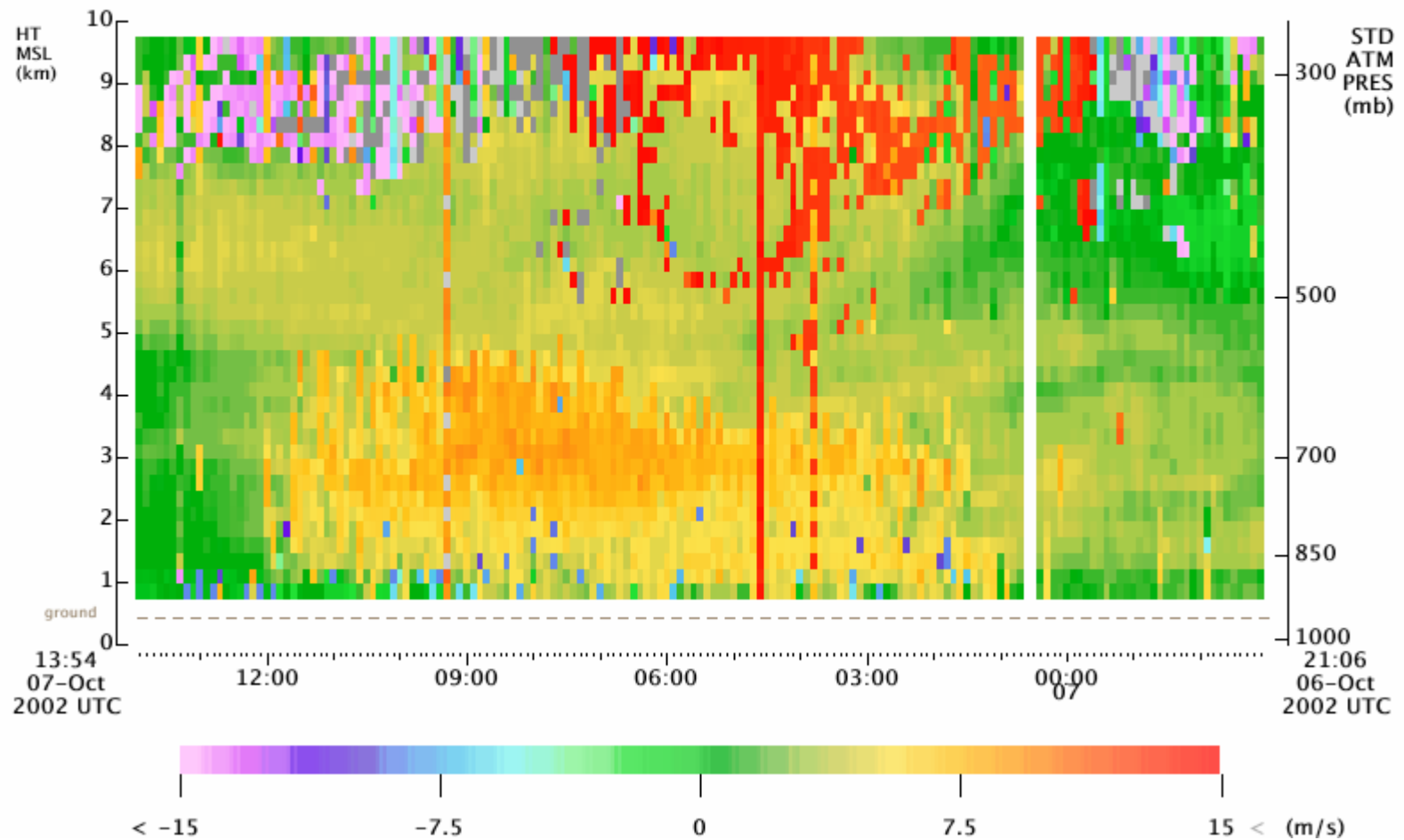
NOAA PROFILER NETWORK



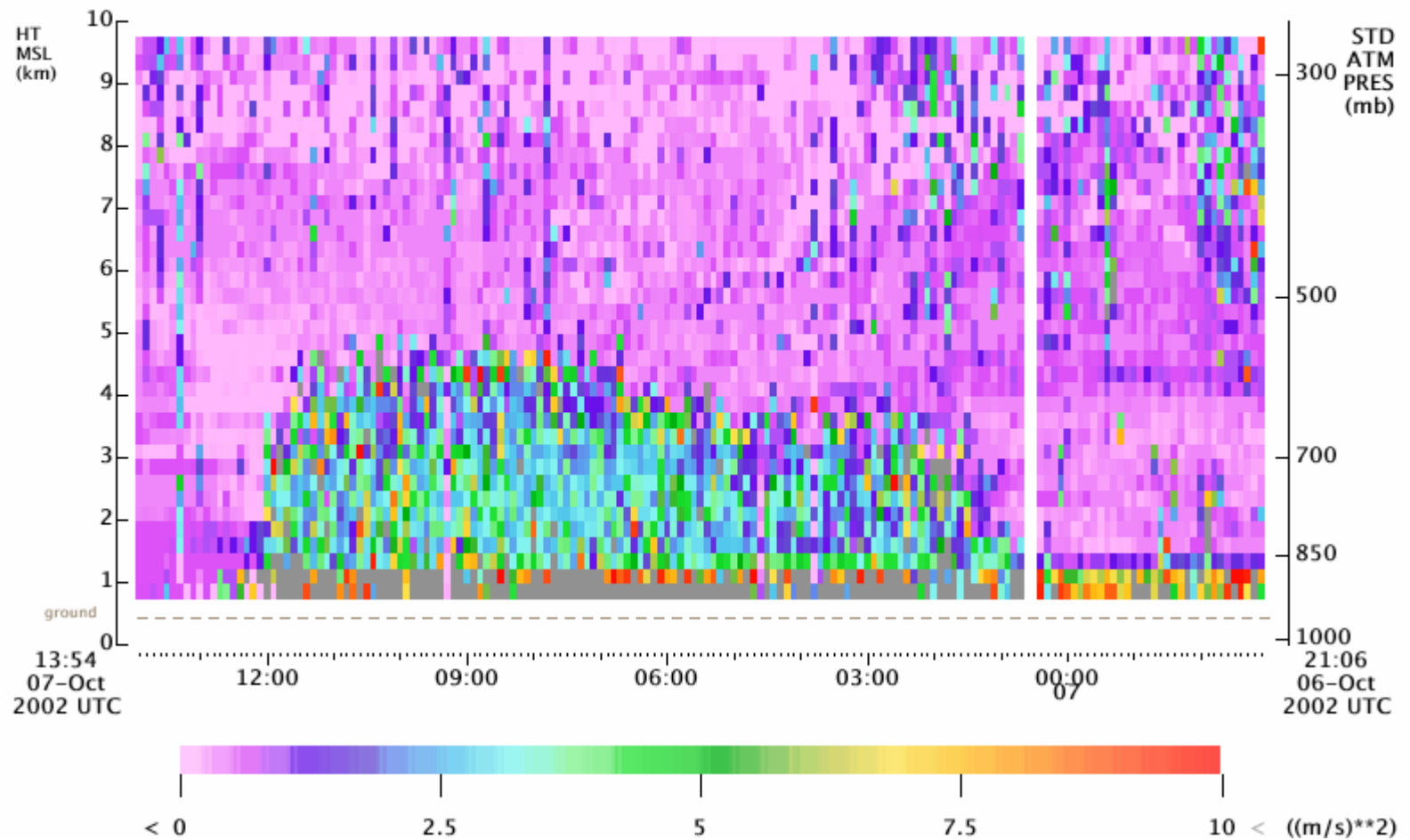
HILLSBORO, KS US Lat:38.31 Lon:-97.3 Elev:446m

RadialVelocity | Beam:N(352deg) | Res:6min | QC:allData

NOAA PROFILER NETWORK

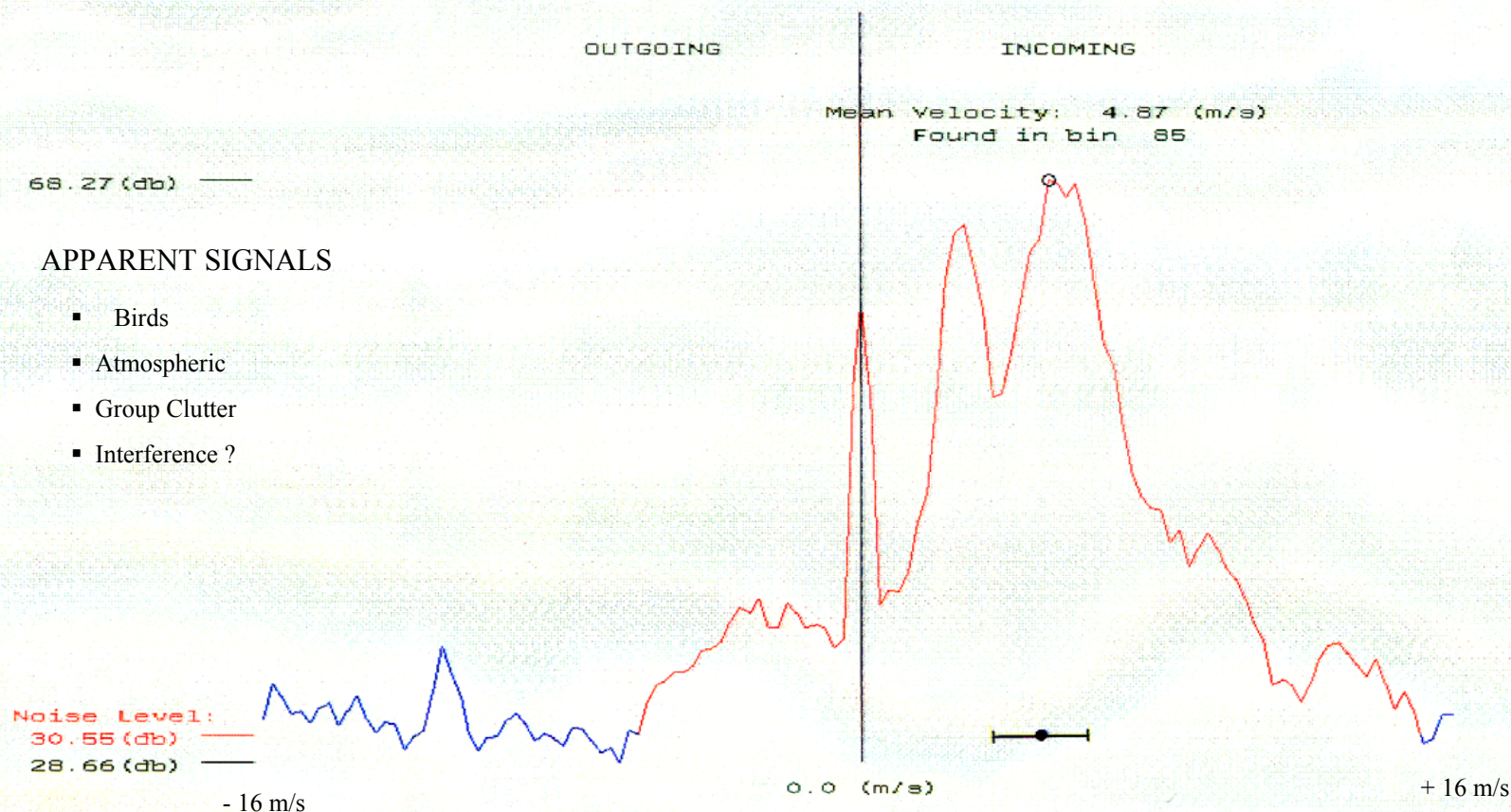


HILLSBORO, KS US Lat:38.31 Lon:-97.3 Elev:446m
VelocityVariance | Beam:N(352deg) | Res:6min | QC:allData
NOAA PROFILER NETWORK



POWER SPECTRUM at WHITE SANDS NM

Elev: 1.22 (km) | Res: 6 min | Clutter: off | Method: averaged
Mode: low | Beam: north | Gate: 10, hgt= 3.97 (km)

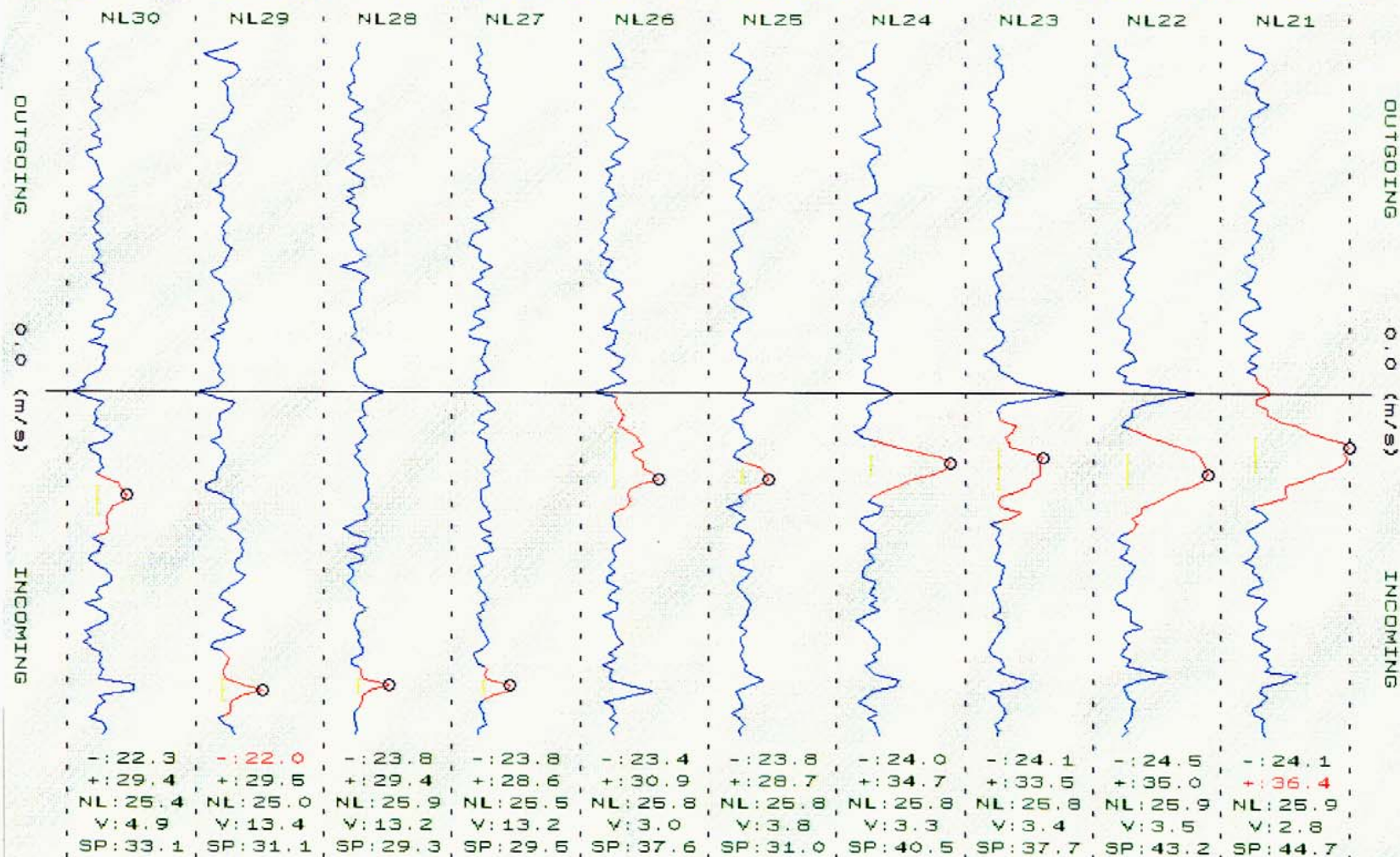


09-OCT-02
06:48
GMT

0th Moment: 76.9 (db) 1st Moment: 4.6 (m/s) 2nd Moment: 1.67 (m/s)**2

POWER SPECTRA at HILLSBORO KS

Elev: 0.45 (km) | Res: 6 min | Clutter: off | Method: averaged



07-OCT-02

03:54

GMT

-, +: min, max value (db)

SP: signal power (db)

NL: noise level (db)

V: radial velocity (m/s)

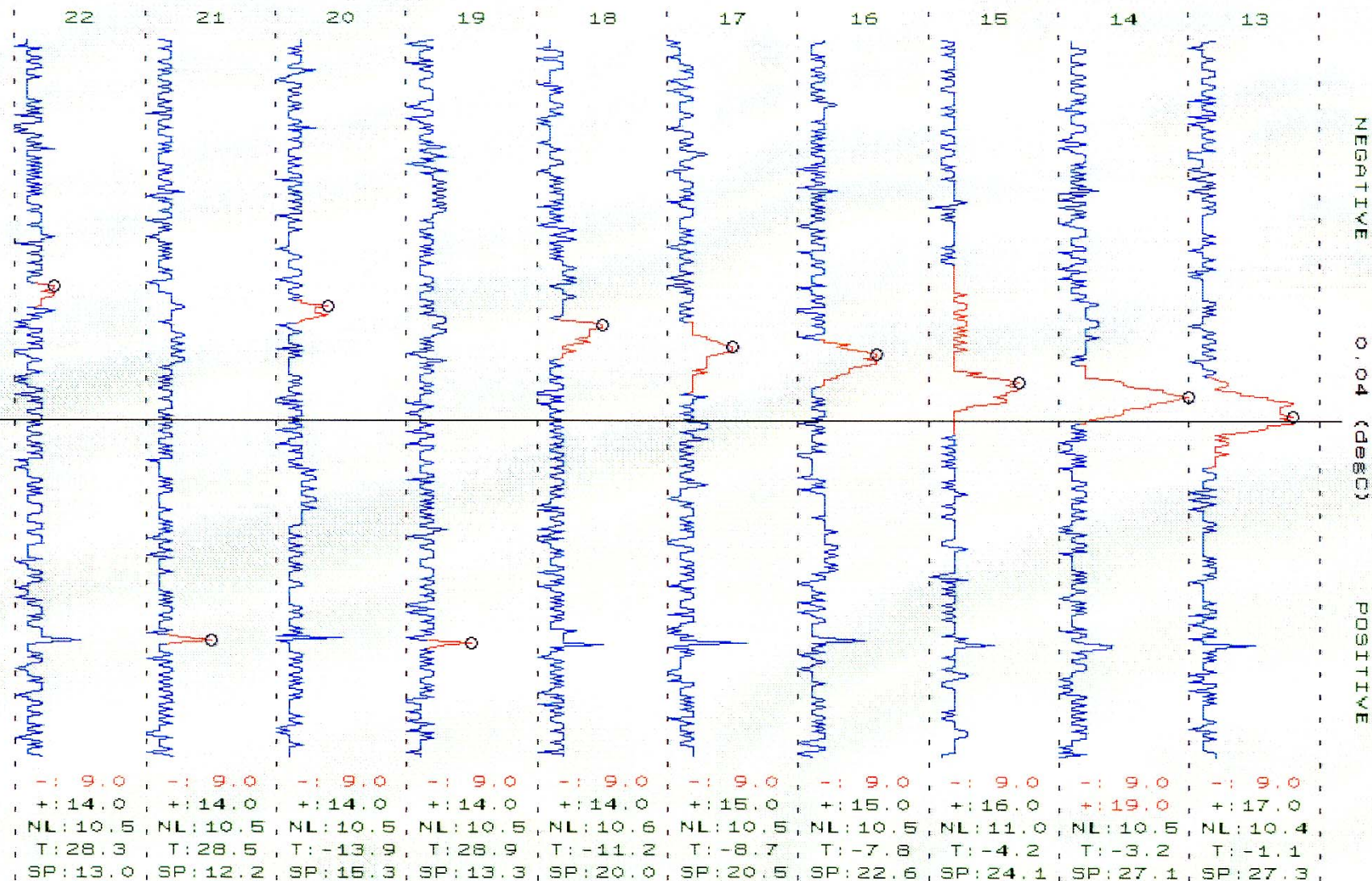
07-OCT-02

03:00

GMT

RASS SPECTRA at HILLSBORO KS

Elev: 0.45 (km) | Res: 6 min | Clutter: off | Method: averaged



09-OCT-02
08:24
GMT

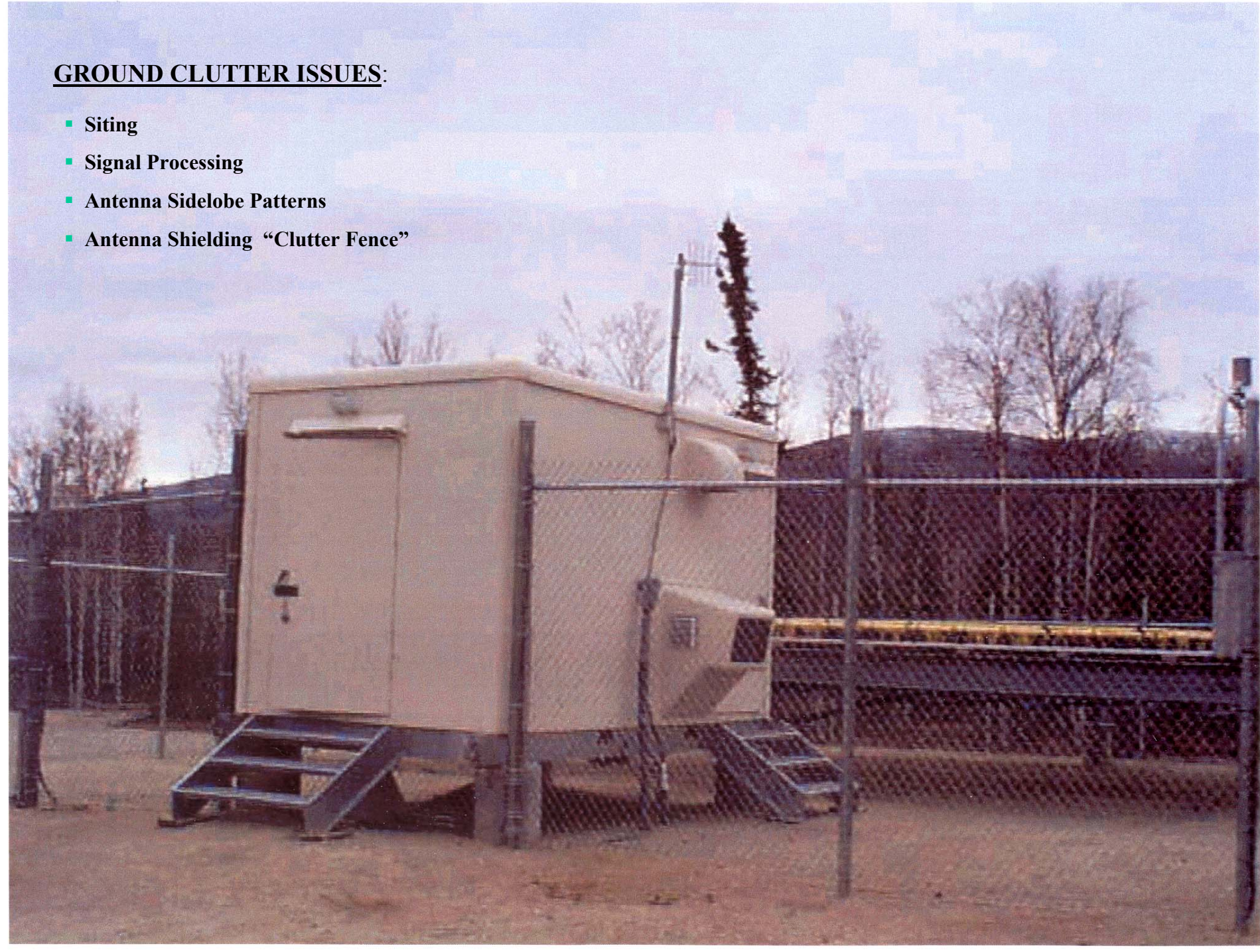
-, +: min, max value (db)
SP: signal power (db)

NL: noise level (db)
T: temperature (degC)

09-OCT-02
07:30
GMT

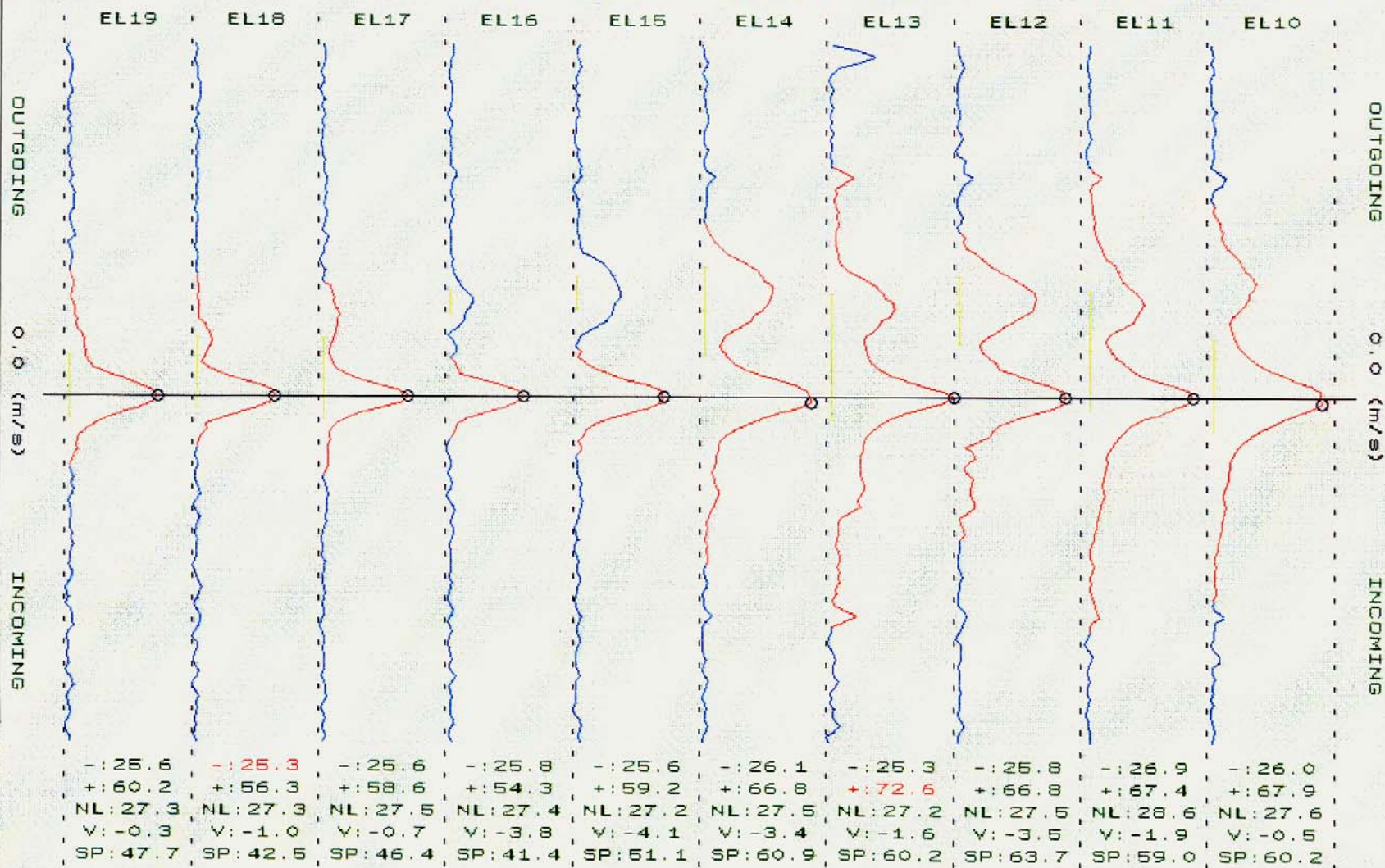
GROUND CLUTTER ISSUES:

- Siting
- Signal Processing
- Antenna Sidelobe Patterns
- Antenna Shielding “Clutter Fence”



POWER SPECTRA at CENTRAL AK

Elev: 0.26 (km) | Res: 6 min | Clutter: off | Method: averaged



08-OCT-02
17:54
GMT

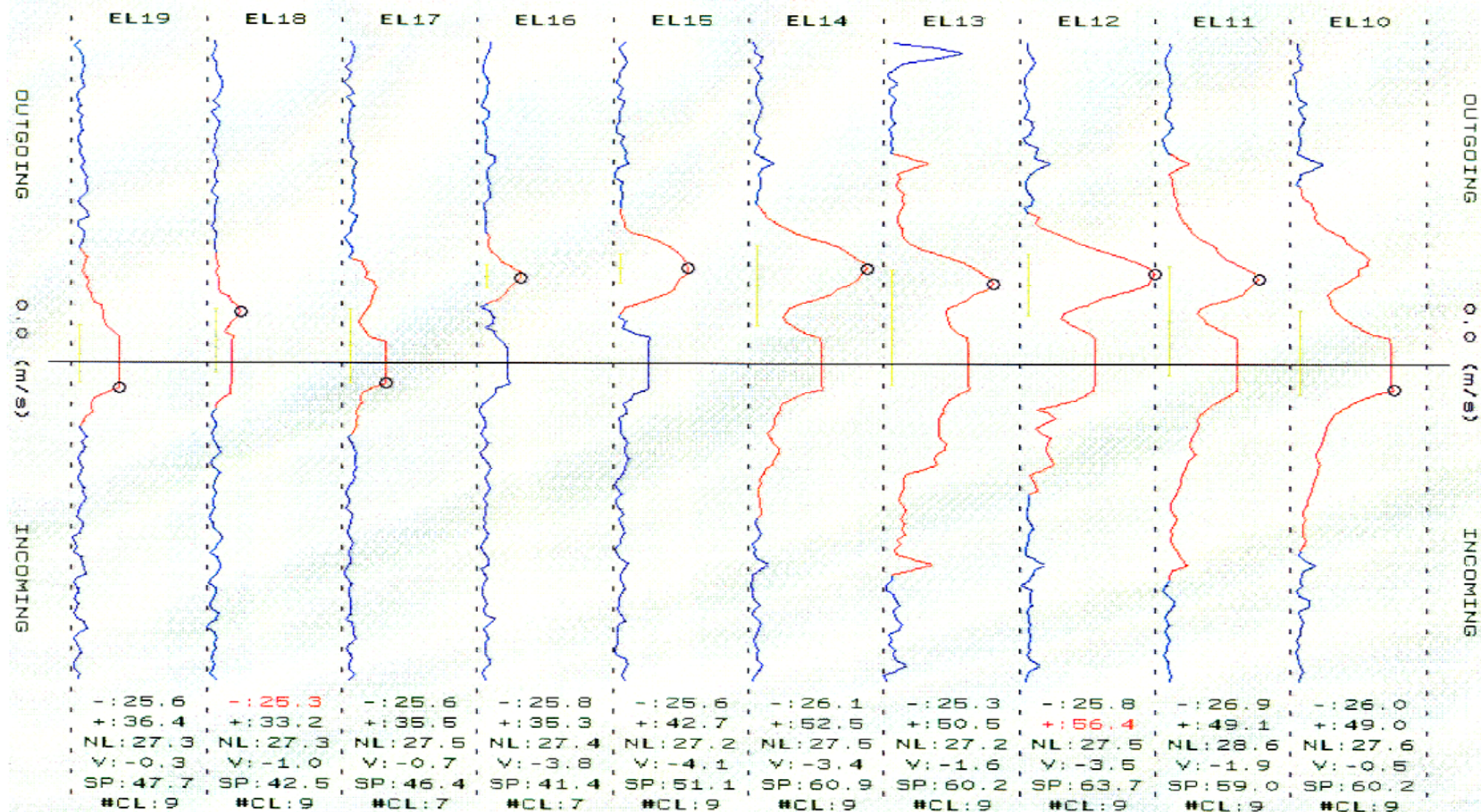
-, +: min, max value (db)
SP: signal power (db)

NL: noise level (db)
V: radial velocity (m/s)

08-OCT-02
17:00
GMT

POWER SPECTRA at CENTRAL AK

Elev: 0.26 (km) | Res:6 min | Clutter:on | Method:averaged



08-OCT-02
17:54
GMT

-,+: min,max value (db)
SP: signal power (db)
NL: noise level (db)

V: radial velocity (m/s)
NCL: number of spectral bins
used in clutter removal

08-OCT-02
17:00
GMT

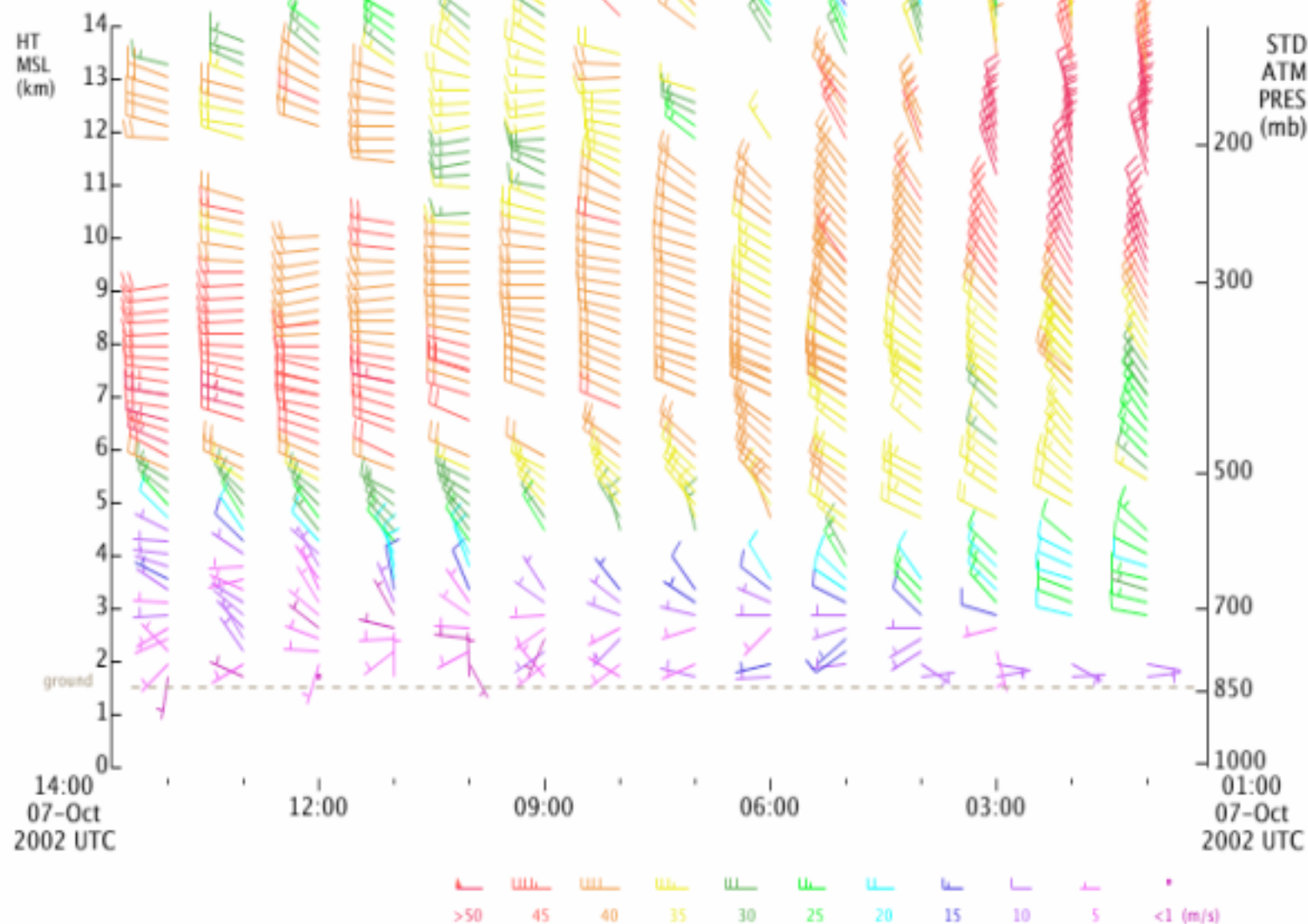
PLATTEVILLE CO Lat:40.18 Lon:-104.73 Elev:1,524m

Wind Speed and Direction | Mode:1,004m,240m | Res:60min |

QC: GOOD ONLY

NOAA PROFILER NETWORK

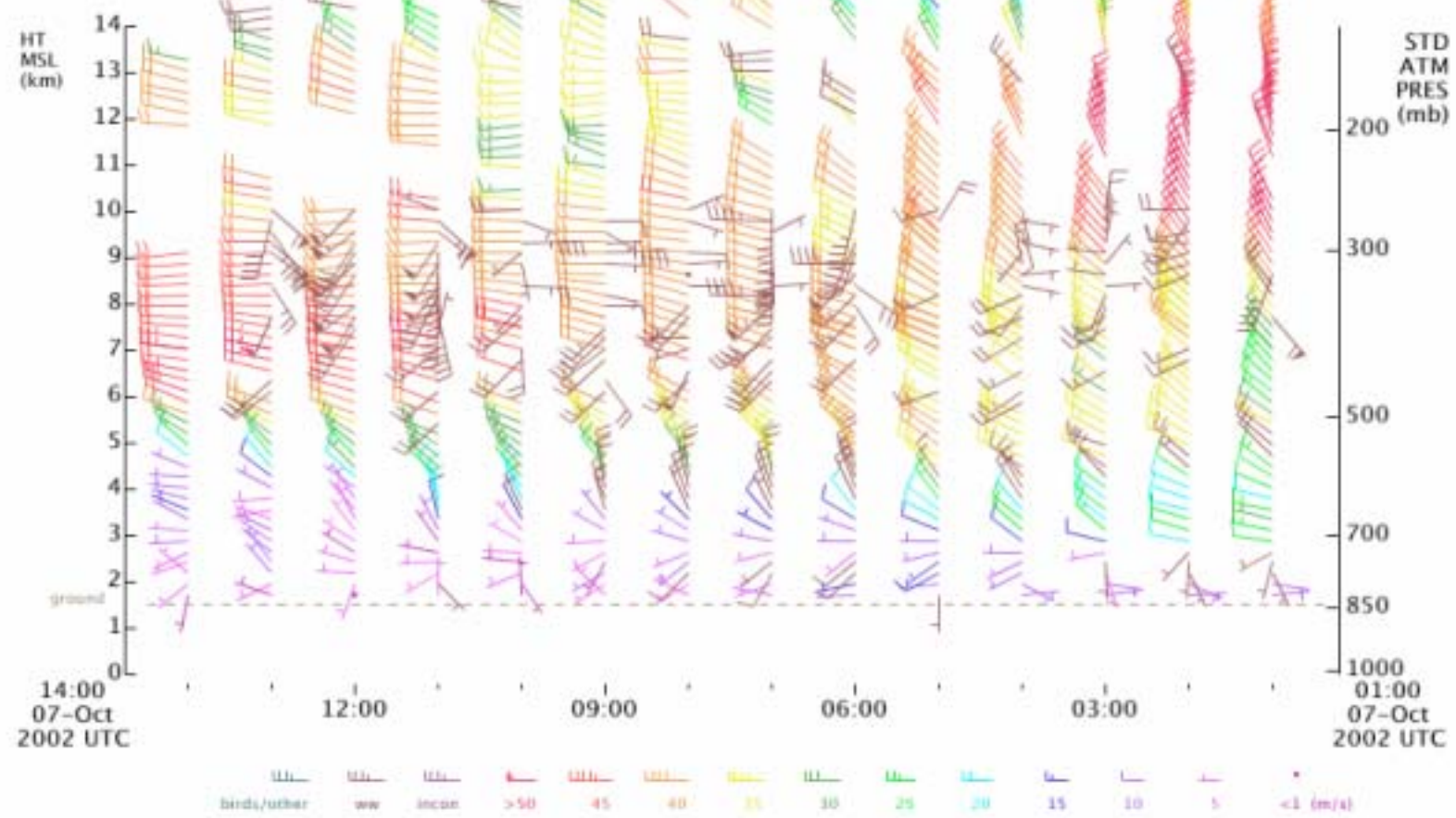
Experimental Wind Data Only, Please Verify Before Using



PLATTEVILLE CO Lat:40.18 Lon:-104.73 Elev:1,524m
Wind Speed and Direction | Mode:1,004m,240m | Res:60min | QC: ALLDATA

NOAA PROFILER NETWORK

Experimental Wind Data Only, Please Verify Before Using



Likely Solutions to Problem Areas:

▪ Data Processing

- Intelligent Peak Picking/Tracking
- Wavelet Filtering

▪ Antenna

- 5 Beams
- Design/Installation

